WHAT IS CLAIMED IS:

1. A support device comprising:

a first gas chamber that is filled with a gas and that supports an object using the gas;

a support frame that supports the first gas chamber; and

a second gas chamber, connected to the first gas chamber, the second gas chamber is provided within the support frame.

2. The support device according to claim 1, wherein the second gas chamber includes multiple cavities provided within the support frame, and passages that interconnect the multiple cavities.

3. The support device according to claim 1, wherein a volume of the second gas chamber is set based on a volume of the first gas chamber.

4. The support device according to claim 3, wherein the volume of the second gas chamber is between one and five times the volume of the first gas chamber.

5. The support device according to claim 1, further comprising:

a detector that detects an internal pressure of at least one of the first gas chamber and the second gas chamber; and

a controller that controls the internal pressure based on detection results of the detector.

6. The support device according to claim 1, further comprising:

a vibration absorption device located in a passage between the first gas chamber and the second gas chamber.

7. The support device according to claim 6, wherein the vibration absorption device includes a plurality of orifices that absorb vibrations in a specified frequency band.

8. The support device according to claim 1, further comprising:

a surface treatment provided on an inner surface of the second gas chamber in order to prevent the gas from leaking out of the second gas chamber.

9. The support device according to claim 1, wherein the support frame is a casting.

10. The support device according to claim 1, further comprising:

a drive that drives the object, using an electromagnetic force, in a direction in which the first gas chamber supports the object.

11. A stage device in which a stage unit moves on a platform, wherein the platform is supported by the support device according to claim 1.

12. An exposure apparatus that has a projection optical system that exposes a pattern of a mask that is supported on a mask stage onto a photosensitive substrate that is supported on a substrate stage, wherein at least one of the mask stage, the projection optical system, and the substrate stage, is supported by the support device according to claim 1.

13. A method of manufacturing the support device of claim 1, the method comprising:

forming a casting mold of the support frame by providing a first core within a hollow mold, and by providing a second core that is in contact with the first core and the hollow mold;

placing a molten material into the mold; and

after the material that has been placed into the mold has cooled, the mold, the first core and the second core are removed to form the second gas chamber in the support frame.

14. The method according to claim 13, further comprising:

providing multiple pairs of the first core and the second core with spaces therebetween, and providing third cores in gaps between adjacent ones of the first cores; and

blocking all but one of the multiple holes formed by the second cores in the support frame.

15. The method according to claim 13, further comprising:

performing a surface treatment on an inner surface of the second gas chamber to prevent gas from leaking out of the second gas chamber.

16. A method of manufacturing a support device that includes a first gas chamber, which is filled with a gas and that supports an object using the gas, and a support frame that supports the first gas chamber, the method comprising:

forming a casting mold of the support frame by providing a first core within a hollow mold, and by providing a second core that is in contact with the first core and the hollow mold;

placing a molten material into the mold; and

after the material that has been placed into the mold has cooled, the mold, the first core and the second core are removed to form a second gas chamber that is arranged to connect to the first gas chamber.

17. The support device manufacturing method according to claim 16, further comprising:

providing multiple pairs of the first core and the second core with spaces therebetween, and providing third cores in gaps between adjacent ones of the first cores; and

blocking all but one of the multiple holes formed by the second cores in the support frame.

18. The support device manufacturing method according to claim 16, further comprising:

performing a surface treatment on an inner surface of the second gas chamber to prevent gas from leaking out of the second gas chamber.

19. A support device that has a support surface that supports an object, the support device comprising:

a gas chamber that is filled with a gas, the object is supported by the gas in a first direction that is perpendicular to the support surface;

a drive that is located in the gas chamber, the object is driven in the first direction by an electromagnetic force provided by the drive; and

a temperature adjustment device that adjusts a temperature of the drive by controlling a temperature of the gas in the gas chamber.

20. The support device according to claim 19, wherein:

the gas chamber has a main part, which has the support surface, and a wall member that is removable from the main part; and

the drive has a stator, provided on the wall member, and a movable element that moves relative to the stator.

21. The support device according to claim 20, wherein a seal material is interposed between the main unit and the wall member.

22. The support device according to claim 20, further comprising:

a flow duct, in which a medium for temperature adjustment flows, fabricated in the wall member.

23. The support device according to claim 20, further comprising:

a utility supply duct, that supplies utilities to the drive, fabricated in the wall member.

24. The support device according to claim 20, wherein the movable element of the drive is integrated with the support surface.

25. The support device according to claim 19, further comprising:

a support member that supports the support surface in the first direction, so that the support surface can move.

26. A stage device in which a stage unit can move on a platform, wherein the platform is supported by the support device according to claim 19.

27. An exposure apparatus that has a projection optical system that exposes a pattern of a mask that is supported on a mask stage onto a photosensitive substrate that is supported on a substrate stage, wherein at least one of the mask stage, the projection optical system, and the substrate stage, is supported by the support device according to claim 19.